

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

Claims 1-7 (Cancelled)

8. (Currently Amended) A power circuit for a battery, comprising:
a first energy storage source;
a second energy storage source connected in series with the first energy storage source, the second energy storage source having an allowable input current larger than ~~a permissible~~ an allowable input current of the first energy storage source;
an electric power conversion circuit for converting electric power between an electric motor which is connected to an axle of a vehicle and the first energy storage source and the second energy storage source;
a DC/DC converter for converting electric power between the first energy storage source and the second energy storage source; and
control means for controlling the DC/DC converter, wherein the control means includes DC/DC converter control means for, when regenerative electric power generated by the electric motor charges the first energy storage source and the second energy storage source through the electric power conversion circuit, controlling the DC/DC converter so that an input current to the first energy storage source does not exceed the ~~permissible~~ allowable input current of the first energy storage source.

9. (Previously Presented) The power circuit for a battery according to claim 8 further comprising:
a vehicle speed sensor for detecting vehicle speed of a vehicle;
a braking command unit for issuing a braking command in accordance with which braking is applied to the vehicle with a braking force; and
a first voltmeter for detecting terminal voltage of the first energy storage source, wherein

the control means comprises:
input current calculation means for calculating the regenerative electric power generated based on the vehicle speed detected and the braking force, and for calculating an input current with which the regenerative electric power charges the

first energy storage source and the second energy storage source without an electric power shift in the DC/DC converter; and

allowable input current calculation means for obtaining a state-of-charge (SOC) of the first energy storage source, based on the terminal voltage of the first energy storage source, to calculate an allowable input current to the first energy storage source, based on the SOC; and

when the regenerative electric power charges the first energy storage source and the second energy storage source through the electric power conversion circuit, the DC/DC converter control means controls, when the input current obtained from the input current calculation means is larger than the allowable input current obtained from the allowable input current calculation means, the DC/DC converter so that the regenerative electric power is shifted from the first energy storage source to the second energy storage source.

10. (Previously Presented) The power circuit for a battery according to claim 9, wherein, when the regenerative electric power charges the first energy storage source and the second energy storage source through the electric power conversion circuit, the DC/DC converter control means controls, when the input current obtained from the input current calculation means is not larger than the allowable input current obtained from the allowable input current calculation means, the DC/DC converter so that the regenerative electric power is shifted from the second energy storage source to the first energy storage source.

11. (Previously Presented) The power circuit for a battery according to claim 8 further comprising:

a vehicle speed sensor for detecting vehicle speed of a vehicle;

a braking command unit for issuing a braking command in accordance with which braking is applied to the vehicle with a braking force; and

a first voltmeter for detecting terminal voltage of the first energy storage source, wherein

the control means comprises input current calculation means for calculating a regenerative electric power generated based on the vehicle speed detected and the braking force, and for calculating an input current with which the regenerative electric power charges the first energy storage source and the second energy storage source without an electric power shift in the DC/DC converter; and

when the regenerative electric power charges the first energy storage source and the second energy storage source through the electric power conversion circuit, the DC/DC converter control means controls, when the input current obtained from the input current calculation means is larger than a value set in advance, the DC/DC converter so that the electric power is shifted from the first energy storage source to the second energy storage source, and controls, when the input current obtained from the input current calculation means does not exceed a value set in advance, the DC/DC converter so that the electric power is shifted from the second energy storage source to the first energy storage source.

12. (Previously Presented) The power circuit for a battery according to claim 9 further comprising:

a second voltmeter for detecting terminal voltage of the second energy storage source; and

a brake mechanism connected to an axle of the vehicle for mechanically braking rotation of the axle, wherein the control means comprises

regeneration-enabling electric power calculation means for, when the electric power is shifted from the first energy storage source to the second energy storage source through the DC/DC converter, calculating a regeneration-enabling electric power that can be regenerated in the first energy storage source and the second energy storage source based on the terminal voltage of the first energy storage source and the terminal voltage of the second energy storage source, and

mechanical brake control means for, when the regenerative electric power obtained from the input current calculation means is larger than the regeneration-enabling electric power, calculating a mechanical brake operation quantity based on difference between the regenerative electric power and the regeneration-enabling electric power, and for controlling the brake mechanism based on the mechanical brake operation quantity.

13. (Previously Presented) The power circuit for a battery according to claim 12, wherein the second energy storage source includes a capacitor, and when the regenerative electric power charges the first energy storage source and the capacitor through the electric power conversion circuit, the DC/DC converter control means controls the DC/DC converter so that an applied voltage becomes no larger than an allowable applied voltage of the capacitor.